



BTC DSC 152P
CELL BIOLOGY, ENVIRONMENTAL
BIOTECHNOLOGY AND BIOCHEMISTRY

Contact Hours: 60

Full Marks = 100

Course Objective: The objective of this combined course is to provide students with a comprehensive understanding of the fundamental principles and practical techniques. The course aims to introduce students to cell biology, environmental biotechnology, and biochemistry. The course intends to equip students with practical skills in these areas, enabling them to understand cellular processes, environmental analysis, and biochemical reactions.

Two Experiments are to be performed – one from each part

Part A: Cell Biology

1. Preparation of solutions and buffers.
2. Handling and working principle of simple and compound microscope.
3. Study of mitosis in onion root tips.
4. Study of structure of prokaryotic and eukaryotic cell.

Part B: Environmental Biotechnology

1. Determination of moisture content, pH, particle size, water holding capacity and organic matter content of soil samples.
2. Determination of pH, conductivity and TDS content of water samples.
3. Isolation of microorganisms from soil, air and water.

Part C: Biochemistry

1. To study the effect of pH and temperature on the activity of salivary amylase.
2. Estimation of blood glucose by glucose oxidase method.
3. Estimation of protein by Lowry's method.
4. Separation of amino acids by paper chromatography.

Course Outcomes: *The practical course aims to provide students with a comprehensive understanding of fundamental principles and practical techniques in the areas of Cell Biology, Environmental Biotechnology and Biochemistry. By the end of the course, students will be able to prepare solutions and buffers, handle and operate microscopes, study cell division and cell structure, perform tests on soil and water samples, investigate the effects of pH and temperature on enzyme activity, conduct blood glucose and protein estimations and separate amino acids using paper chromatography.*

SUGGESTED READING

1. Karp, G. 2010. Cell and Molecular Biology: Concepts and Experiments. 6th Edition. John Wiley & Sons. Inc.
2. Berg, J. M., Tymoczko, J. L. and Stryer, L. (2006). Biochemistry. VI Edition. W.H Freeman and Co.
3. Gupta, R & Makhija, S and Toteja R. (2018). Cell Biology : Practical Manual. Prestige Publishers.
4. Patra, J. K., Das, G., Das, S. K., & Thatoi, H. (2020). A Practical Guide to Environmental Biotechnology. Springer.